Title: Applying Knowledge of Money

Brief Overview:

This activity will introduce students to recognizing coins and dollar amounts. Students will practice naming coins and will identify coins using their different names. Students will rename coin and dollar values. Students will learn to add money values to one hundred dollars ($100.00).

NCTM Content Standard/National Science Education Standard:

Number and Operations Standard for Grades 3-5

Students will be able to understand numbers, ways of representing numbers, relationships among numbers, and numbers systems.

- Understand the place value structure of the base ten number system and be able to represent and compare whole numbers and decimals.

Grade/Level:

This lesson is appropriate for grades 2-3.

Duration/Length:

3-4 days (60 minutes per day), including the assessment

Student Outcomes:

Students will:

- State the value of different coins and bills.
- Count the same and different coins and dollars.
- Identify the relationship of coins and dollars.
- Read and write dollar and coin amounts.
- Determine the value of a given set of mixed currency.
- Add and subtract money amounts.
- Introduce decimal notation to write dollar and cents.
- Use the fewest amount of bills and coins to show values (up to $100.00)

Materials and Resources:

Lesson 1

- Overhead projector
- Overhead coins
- Play money for student use (plastic, paper)
- Teacher Resources 1 and 2
- Student Resources 1and 2

Lesson 2

- Teacher Resource 3
- Student Resource 3

Lesson 3

- Pattern blocks
- Paper pattern blocks
- Grab bag (paper bag)
- Plastic coins or paper coins, and bills
- Crayons
- Construction paper
- Paper
- Teacher Resources 4-7
- Student Resources 5-9

Development/Procedures:

Lesson 1

Pennies, Nickels, Dimes, Quarters and Half-Dollars

Pre-Assessment

- Using overhead projector coins, place a coin on Teacher Resource 2, "Coin Mat", and ask students to name the coin. (Be sure to use heads and tails of coins to assist in coin recognition. Record the names of the coin.)
- Ask the students to name the value of the coin. Write the value on the transparency.
- Repeat using different coins and increasing value of coins up to $1.00.
- Informally evaluate student's ability to name coins and values using teacher observation.

Launch

- Tell students that they will be asked to name different combinations of coin values.

- Place a handful of the same kind of coins (for example, six nickels) on Teacher Resource 2, "Coin Mat", and transparency.
- Ask students to tell the value.
- Check to see if students recognize coins (pennies, nickels, dimes, and quarters) and state the value shown.

Teacher Facilitation

- Display 55¢ on the overhead using 5 dimes and 1 nickel.
- Ask students to name the total value of the coins shown (using some type of display: chalkboard or digit cards, or overhead)

- Model counting the largest coin values first. Allow students to practice counting larger values first.
- Ask: What are other ways the same coin value can be shown? Have students use coins and Student Resource 2, "Coin Mat", to show other coin combinations that would also total 55¢
- Have students share. Records the different ways to show 55¢.
- Discuss the different combinations with students and ask how can 55¢ be made with the least amount of coins (one half dollar and one nickel).
- Increase the money values and repeat the process.

Student Application

- Allow students to choose coins up to $2.00 and place coins on mat.
- Have student record value on Student Resource 2, "Coin Mat". Rotate around the room, checking the recorded values and coins on the mat.
- Challenge the students to find the smallest number of coins to represent the same value.
- Practice with different money amounts.
- Review ways of counting coins and model counting largest coin values first. Check students by teacher observation to assess if coin value is understood.

Embedded Assessment

- Use the fewest pieces of money to show $0.99.

Re-teaching/Extension

- For those who have not completely understood the lesson, review naming coins (heads, tails) and coin values of the same coin type.
- For those who have understood the lesson, review counting different kinds of coins and trading coins to make the same value. Total value can extend to $5.00 in coins.

Lesson 2

Dollar Bills and Coins

Pre-Assessment

- Write 23¢ on the chalkboard and ask, "Is there another way to write this amount?"
- Elicit responses from students that mention the decimal point.
- Explain that .23 = . decimal 2 dimes 3 pennies
- Have students show another way to write 88¢.

Launch

- Place $6.00 (Five $1.00 bills, two quarters, 4 dimes, 1 nickel, and 5 pennies) on the overhead and ask students to name the value. Ask students to count value orally.
- Tell students that you just discovered a dime in your pocket. How could you write six dollars and ten cents? Model where to write the dollars (bills) and cents.

Teacher Facilitation

- Display a combination of coins and bills on the overhead, such as two $5 bills and six nickels.
- Ask the students to write the total amount using a decimal. ($10.30)
- Ask students to show the same amount using the least amount of bills and coins. (One ten-dollar bill, one quarter and one nickel.) Model conversions as needed.
- Provide practice working and writing with dollars and cents.
- Repeat the process using:
    - Four one dollar bills, four quarters, six dimes
    - Two ten dollars, two quarters, ten dimes, four nickels and five pennies.
- Continue to show different money amounts up to $100.00 for students to name and write in decimal form.

Student Application

- Use Teacher Resource 3, "Money Cards", to match money amounts. Use different coins and bill combinations to show the matching amount.
- Group the students in pairs. Have one partner write a money amount in decimal form and have the other partner show the amount in bills and coins. Work with money amounts up to $100.00.

Embedded Assessment

- Say $20.64 aloud, and have students show this amount using the fewest number of bills and coins.
- Name the value for 5 ten bills, 2 ones, 4 quarters, 3 dimes, 8 pennies. Practice counting starting with the largest amounts.

Re-teaching/Extension

- For those who have not completely understood the lesson, review coin values up to $10.00 using coins and bill combinations. Practice counting the same coin values and using different values with bills.
- For those who have understood the lesson, review trading money to make the same value. Students practice and increase the values being shown. Students should be able to name amounts up to $100.00.

Development/Procedures:

Lesson 3
Pattern Block Money Count

Advanced Preparation

Before students arrive, copy Teacher Resource 1, Pattern Block Spinner for each student. Prepare Teacher Resource 4, Pattern Block Chart with specific amounts allocated to the different shapes. Also make Teacher Resource 4 into a transparency. Prepare grab bag by filling a paper or cloth bag with coin models. ..

Pre-Assessment

Place the students in a circle. Pass the grab bag with the plastic coins around the circle. Teacher will ask each student to pull two coins from the bag and tell their combined value. This activity serves as an embedded assessment to monitor students understanding and ability to count money amounts.

Launch

- Say, "We are going to discover the value of different pattern block shapes." First, we need to make sure we know the names of the shapes we are going to use."
- Place each pattern block on the overhead projector one at a time. Ask, "Who can tell me the name of this shape?"
- Continue to elicit responses from volunteers to state the name of each pattern block as it is presented on the overhead projector.

Teacher Facilitation

- Distribute a set of four pattern block pieces to each student.
- Ask, "What kind of design can you make using your pattern blocks?"
- Select students to tell some possible designs they can make. Model a design using your overhead pattern blocks on the overhead projector.
- Say, "I wonder how much my pattern block design costs?"
- Display Teacher Resource 4, Pattern Block Chart that shows the pattern blocks with their values
- Model how to determine the amount of your previously made pattern block design on the overhead projector. Write the specific values of the pattern blocks on top of each pattern block with an overhead pen.
- Add up the values of all the shapes in the design on the overhead projector to show the cost of your teacher made design.
- Use Teacher Resource 5, Overhead Grid Paper to write out the values with the decimals lined up

Student Application – Student made pattern block designs

- Distribute Teacher Resource 6 Paper Pattern Block Design and construction paper to each student.
- Say, “Now it’s your turn to make a design using your pattern blocks.”
- Give students about ten minutes to make and glue their design using a total of ten pattern blocks on their construction paper.
- Say, “Now that you made your design, you can figure out how much it costs.”
- Distribute coin and dollar models to each student. Accommodate students who express difficulty by providing calculators. This will facilitate the process of counting the money for each pattern block shape in their particular design.
- Students will record the amount of their pattern block design in dollars and cents on Student Resource 4, Money Place Value chart.
- Distribute 3x3” sticky it notes to each student.
- Say, “Make another pattern block design using ten pattern block shapes.”
- Give students about five minutes to build another shape.
- Say, “Add up your new pattern block design and write the amount that it costs on your sticky it note.”
- Say, “Close your eyes and I will collect the post it notes and switch it with another student at your table. Open your eyes and find the person at your table that has the design with the amount that matches your sticky it note.”
- Give students the opportunity to circulate around their tables to find the matching shape.

Embedded Assessment

This lesson serves as a two-fold assessment process. Knowledge of counting money and identification of pattern block shapes are assessed throughout the lesson. Circulate and observe while the students are counting out their money amounts to monitor progress. Observe and record student behaviors on Teacher Resource Sheet 7, Teacher Observation Checklist.

Re-teaching

- Students who have difficulty adding money will work with the teacher and play the “Pattern Block Spinner Game”.
- Pass out Student Resource 5, Pattern Block Spinner to each group.
- Place a paper clip and pencil in the middle of the pattern block spinner to make a movable spinner.
- Students will take turns spinning the spinner three times and record the amounts of their shapes on Student Resource 6, Game Recording Sheet. After students have recorded their amounts, tell them to add and record the sum.
- This game provides students with extra reinforcement time with counting money.

Extension

- Students, who need to be challenged, will solve solutions to Student Resource 7, Riddle Cards.

Summative Assessment:

This is a culminating activity that will assess the counting skills taught throughout the unit. Students will demonstrate understanding of coin identification and counting monetary amounts by completing a performance assessment project. Students are expected to also justify and explain their assessment product by completing Student Resource 9, Brief Constructed Response (BCR) .The performance assessment portion will consist of making a construction paper pizza with various toppings. Each topping will cost a certain amount. Students will use addition skills to add up the cost of the pizza and record the final price anywhere on their pizza. After making the pizza by following the directions on Student Resource 8, the students will explain their final answer by completing a BCR prompt. Answer Key may be found on Teacher Resource 8.

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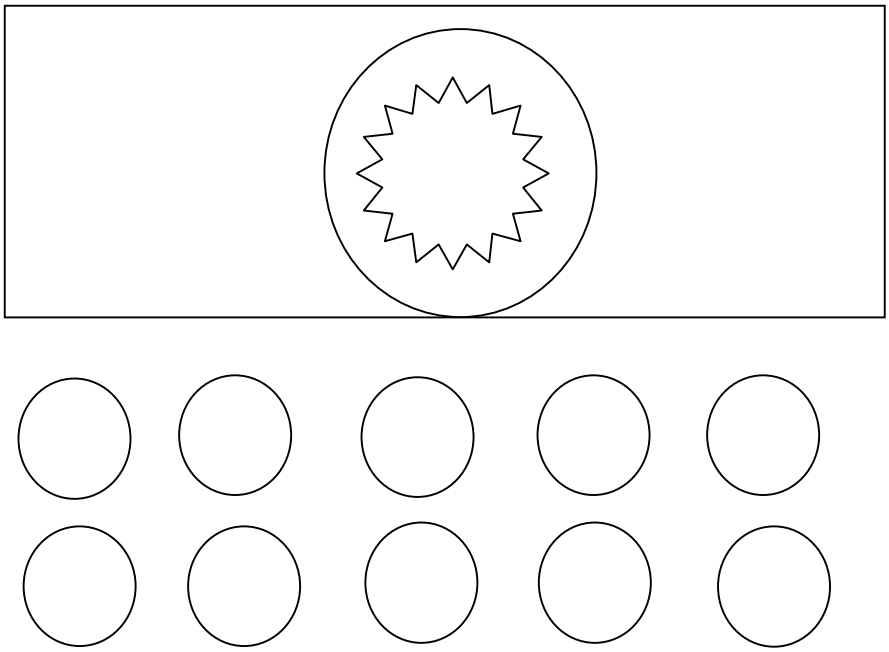
Money Sheet



**** Before using the above resource, the teacher should write denomination of coins inside circles.**

For more realistic money, download money from one of the following websites.

www.enchantedlearning.com/math/money/coins/penny

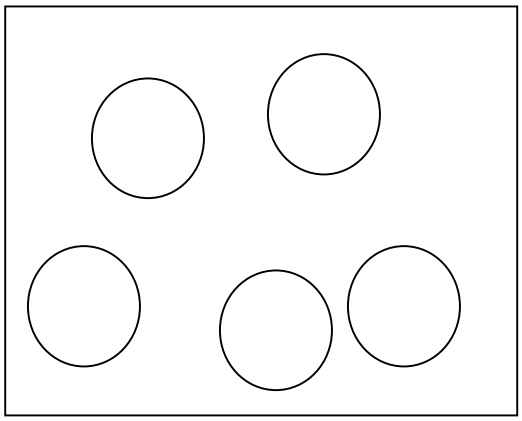
www.busyteachercafe.com.worksheets.coininfo.pds

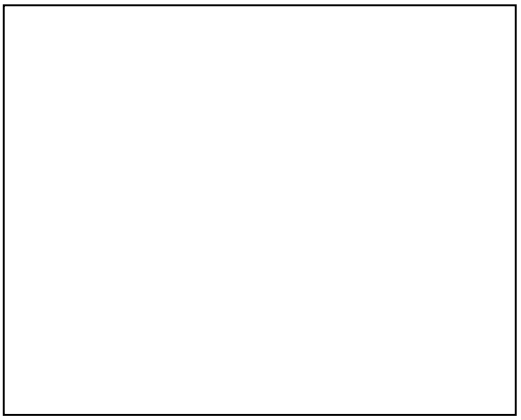
www.moneyinstructor.com/play/asp

Coin Mat

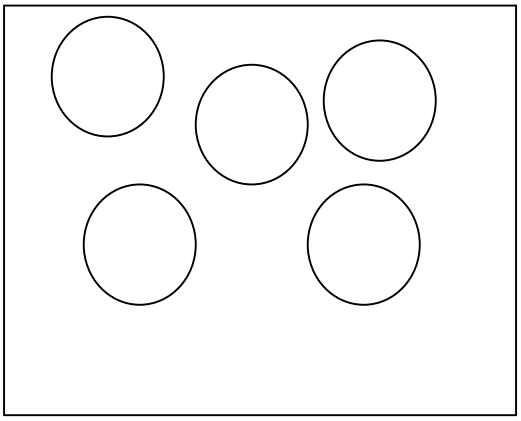
Coin(s) Picture	Name	Value	Different ways to make value	

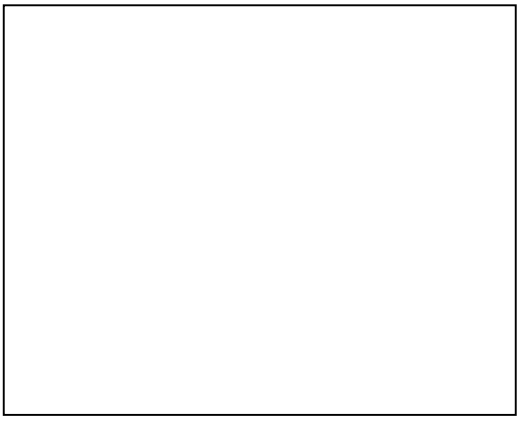
Money Cards



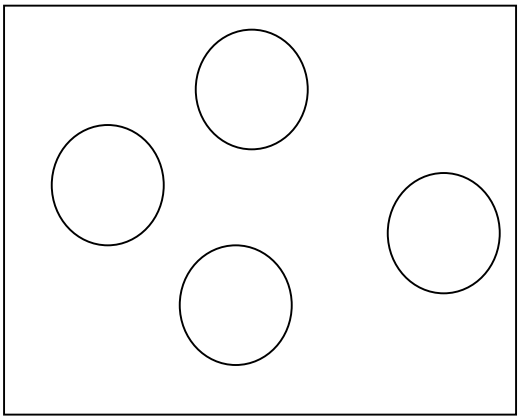


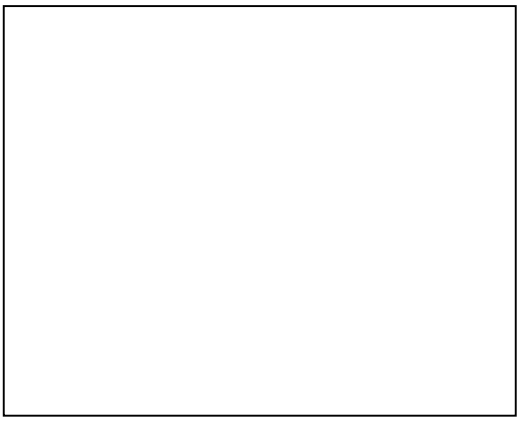
If each coin equals $0.10, what is the total value?





If each coin equals $0.25, what is the total value?





If each coin equals $0.50, what is the total value?

Pattern Block Chart

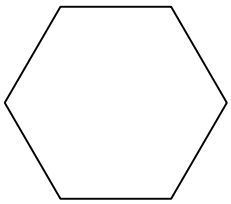
Money Values for pattern blocks

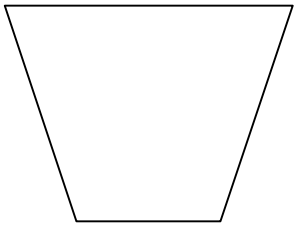
Hexagon = $0.50

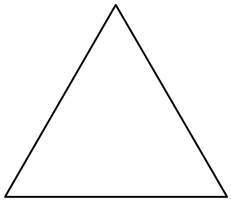
Trapezoid = $0.75

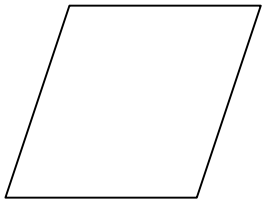
Triangle = $0.10

Rhombus = $1.00

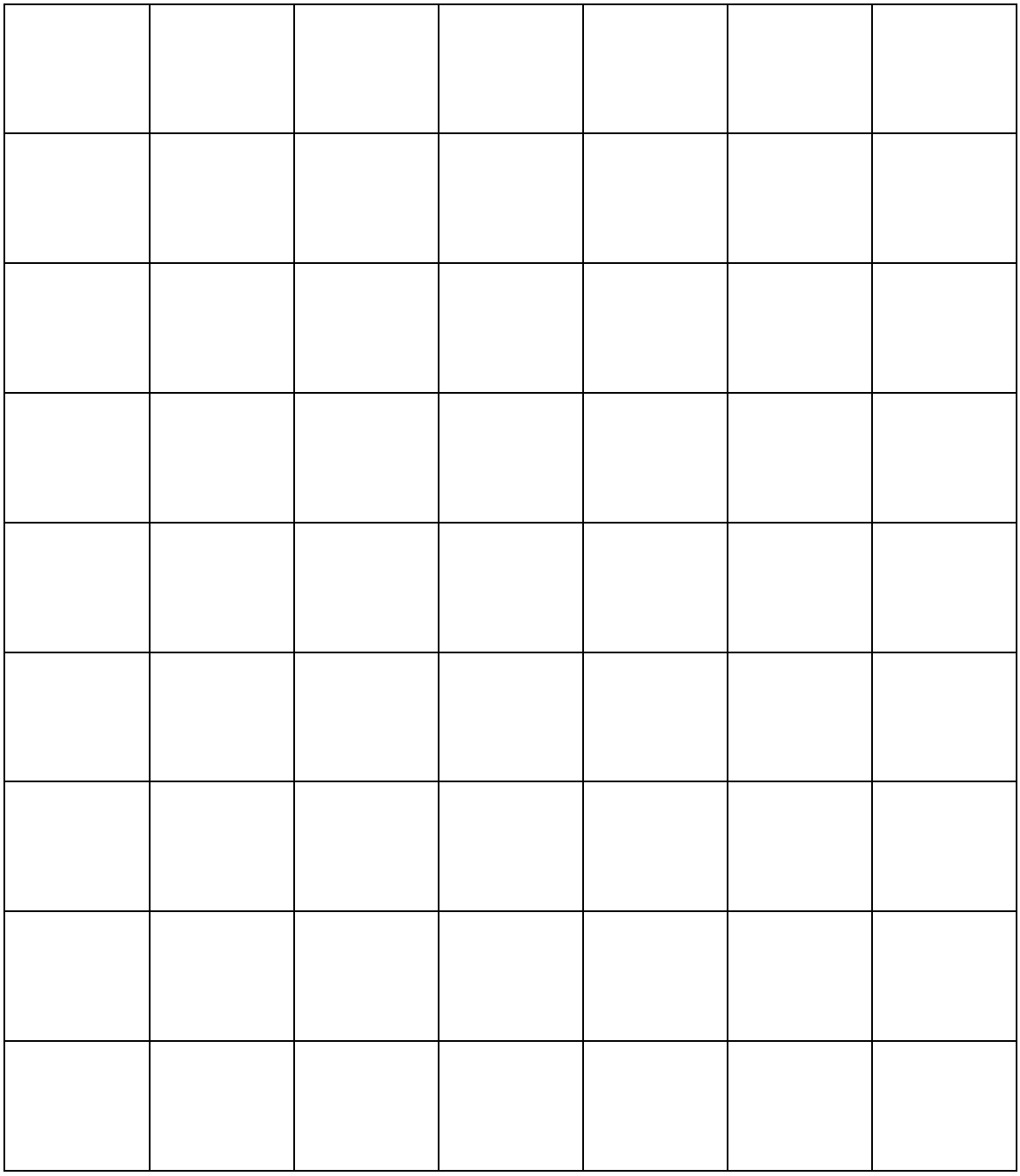






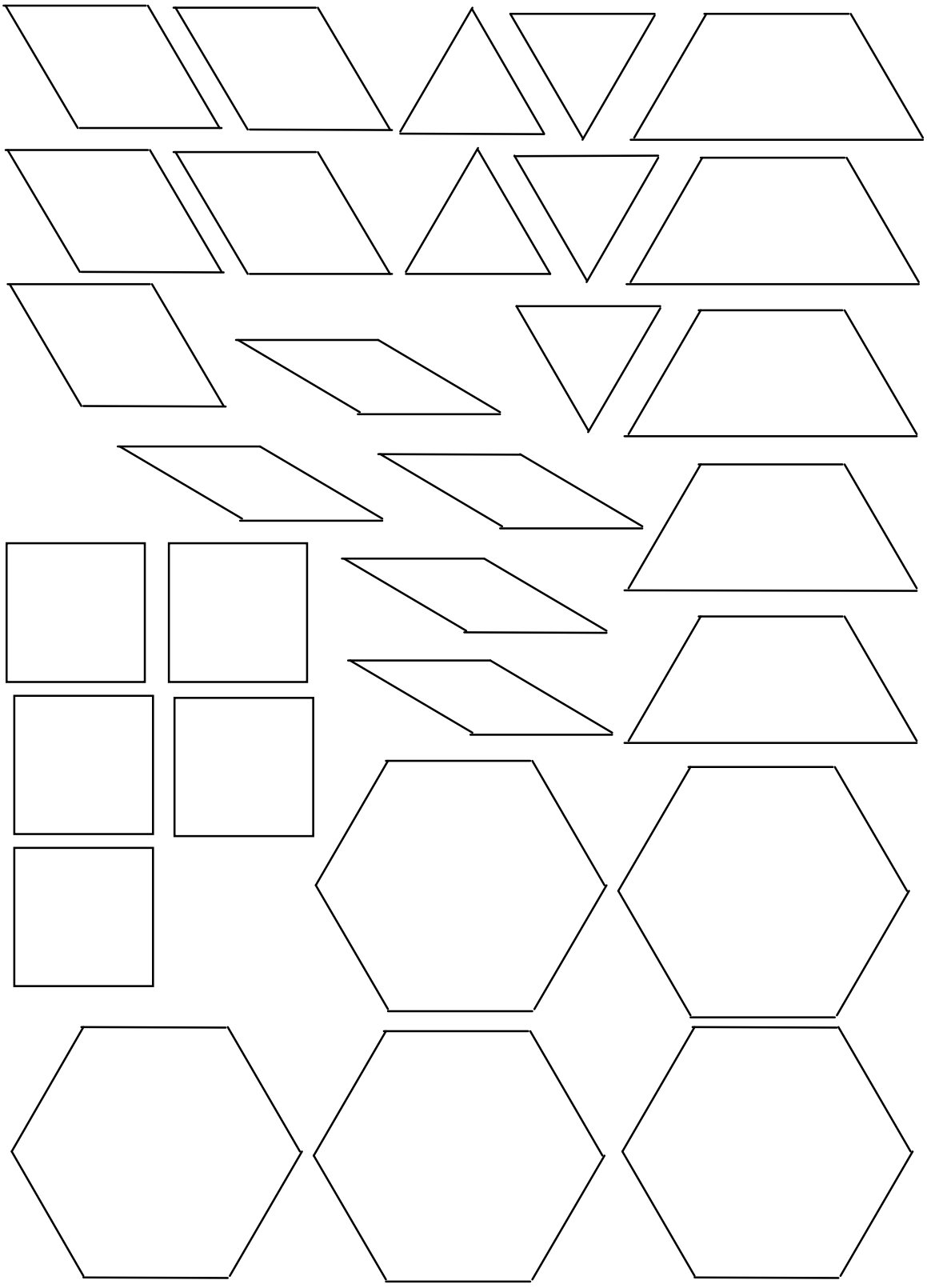


Inch Grid



Paper Pattern Blocks

Teacher Resource 6



Teacher Observation Checklist

Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:
Student Name:	Student Name:

Name _____ Date _____

Brief Constructed Response (BCR)

How Much Does Your Pizza Cost?

Model Answer

Part A.

My pizza has mushrooms (.10) sausage (.75) and onions (1.00). When I add the cost of the pizza toppings together, the pizza will cost $1.85. I added .10 + .75+ $1.00. I remembered to keep the decimal points in a straight row. I added the ones together, then the tens, and then the dollars. I did not need to regroup for my answer.

.10
.75
$1.00
$1.85

Look at the cost of your pizza. If you added another pepperoni piece to your pizza, how much would it cost?

The new price of my pizza is $2.35

Part B.

Use what you know about place value and money to justify your answer. Use pictures, numbers and or words in your explanation.

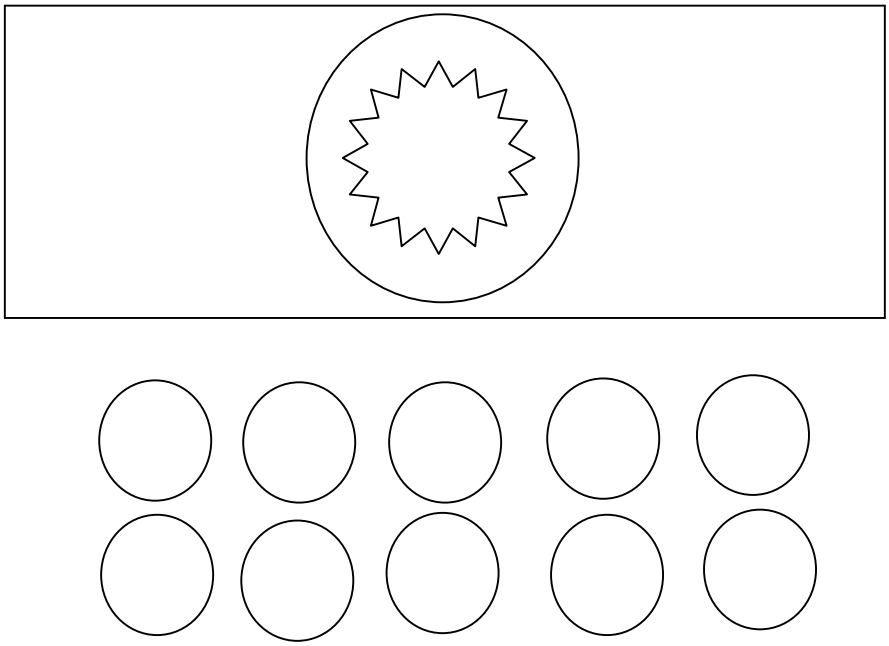
If I add pepperoni (.50) to my pizza, I will add $1.85 + .50 together. The pizza will now cost $2.35. If I add 1.85 +50, and keeping my decimal points straight, my new total is $2.30.

$1.85
+ .50
$2.35

I could also add 5 dimes to $1.85. I would count 1.85+.10=1.95+.10=2.05+.10=2.15+ .10=2.25+.10=$2.35.

Answers for this activity will vary depending on the items chosen for the original pizza. This is one example of how this problem could be solved.

Money Sheet



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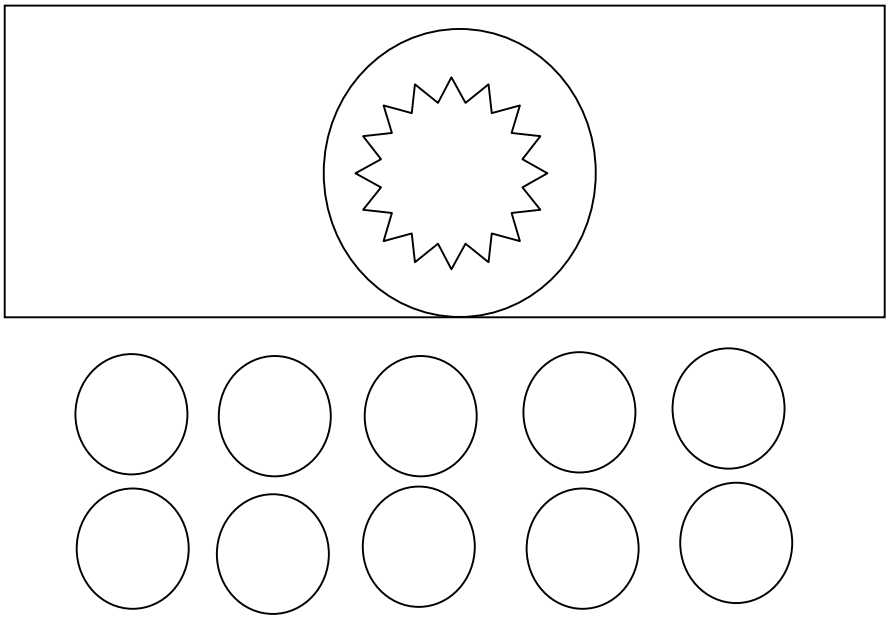
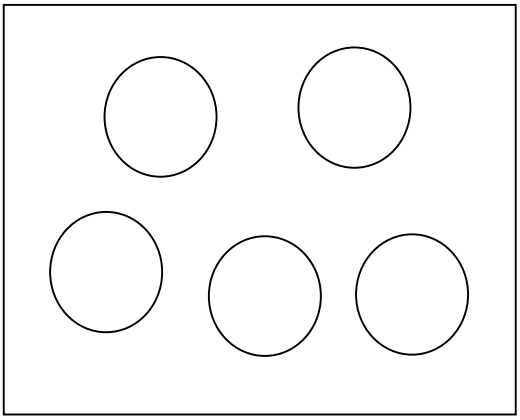


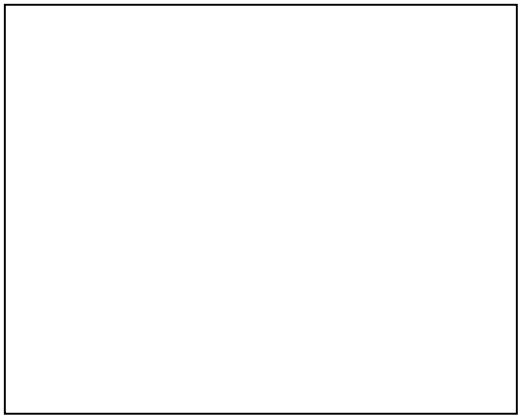
Student Resource 2

Coin Mat

Coin(s) Picture	Name	Value	Different ways to make value	

Money Cards





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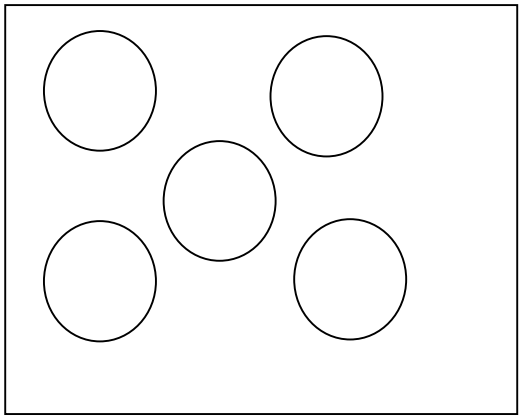

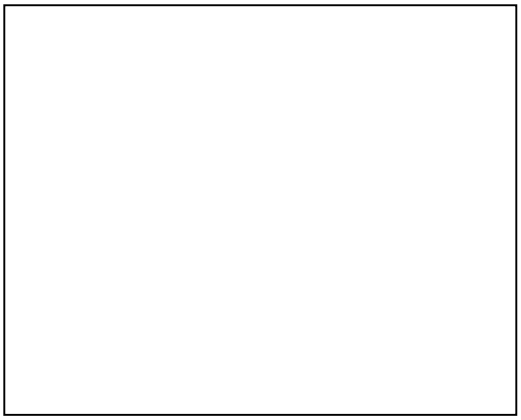

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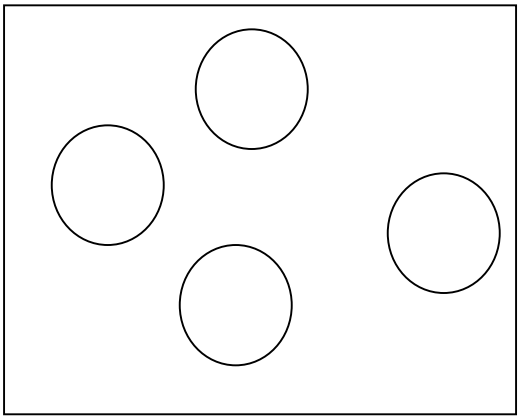
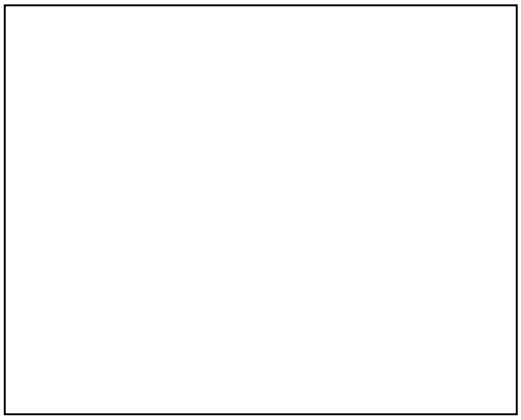


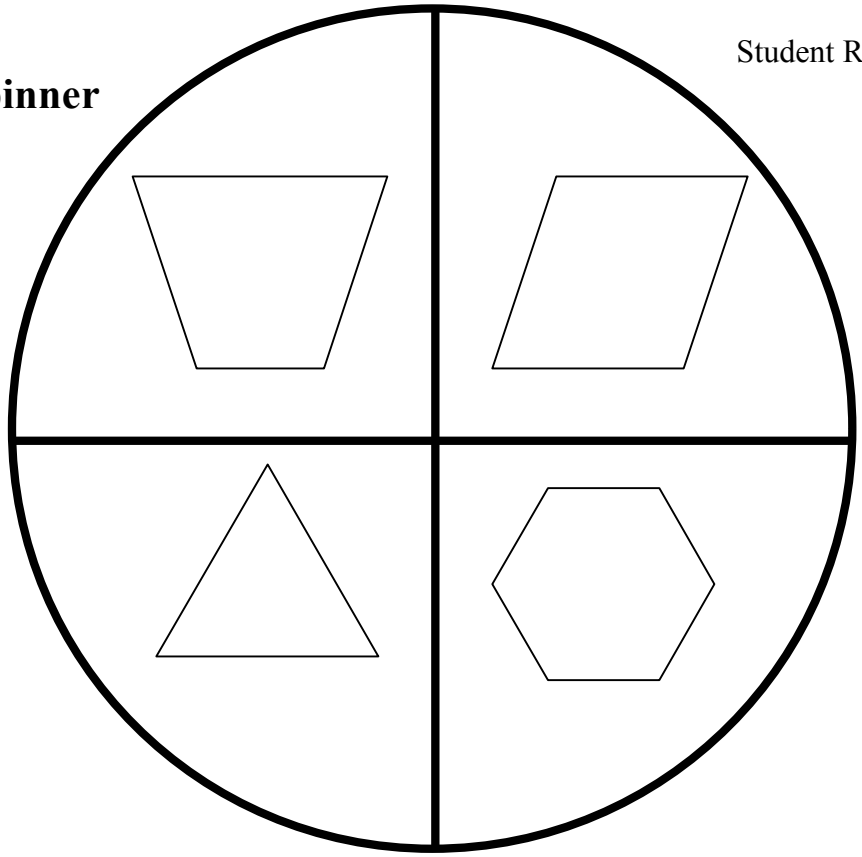


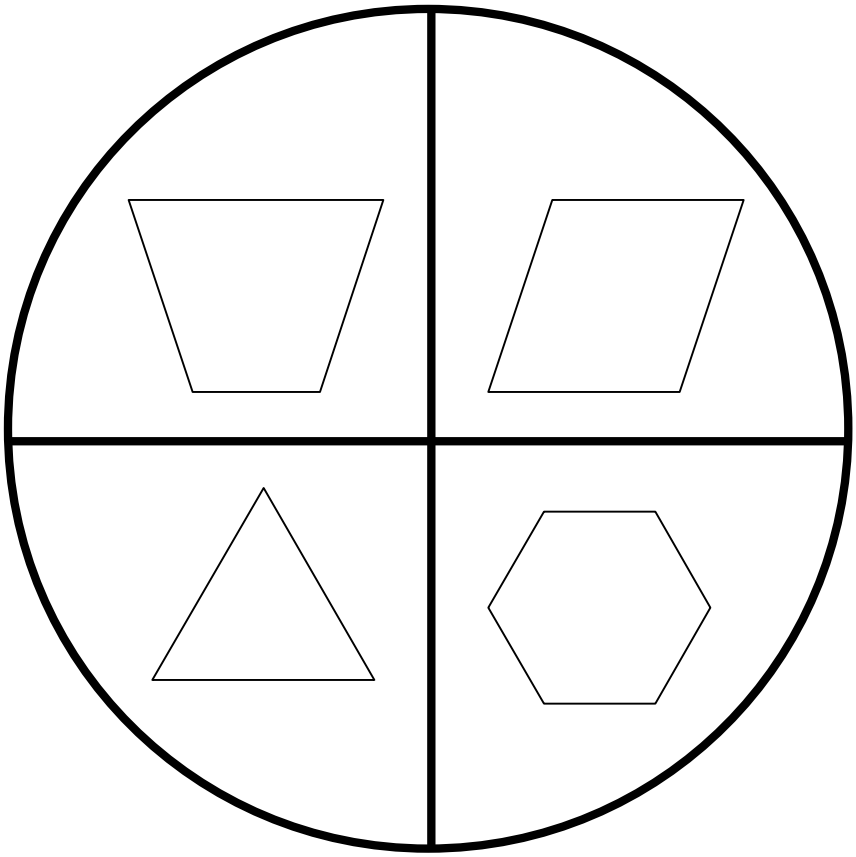
If each coin equals $0.50, what is the total value?

Money place value chart

Dollars	Decimal point	Cents

Shape Spinner





Spinner Game Recording Sheet

Write down the number for each spin. Then add up all of the numbers and write the sum below.

Game 1

Spin 1 _____

Spin 2 _____

Spin 3 _____

_____

Game 2

Spin 1 _____

Spin 2 _____

Spin 3 _____

_____

Game 3

Spin 1 _____

Spin 2 _____

Spin 3 _____

_____

Game 4

Spin 1 _____

Spin 2 _____

Spin 3 _____

_____

Riddle Cards

Use the pattern blocks to help you solve the riddles.

It takes 2 of these to cover a hexagon and has a sum of $1.50. What pattern block shape am I?	Yes, it's true! It takes 3 blues to cover me with a cost of $15.00. What pattern block shape am I?
When you have 6 of me, my sum is $0.60 (60 cents). What pattern block shape am I?	Three triangles cover me with sum of $0.30 (30 cents). What pattern block shape am I?
Write your own riddle.	Write your own riddle.

Adapted from ETA Pattern Blocks Super Source Book

Name _____ Date _____

Pattern Block Pizzeria

Grand Opening!

Here at Pattern Block Pizzeria, you have the chance to make a pizza to your liking. You can add any topping found on the menu below. Don't forget that each topping costs a certain amount.

Menu of Toppings

Hexagon pepperoni = $0.50

Trapezoid sausage = $0.75

Triangle mushroom = $0.10

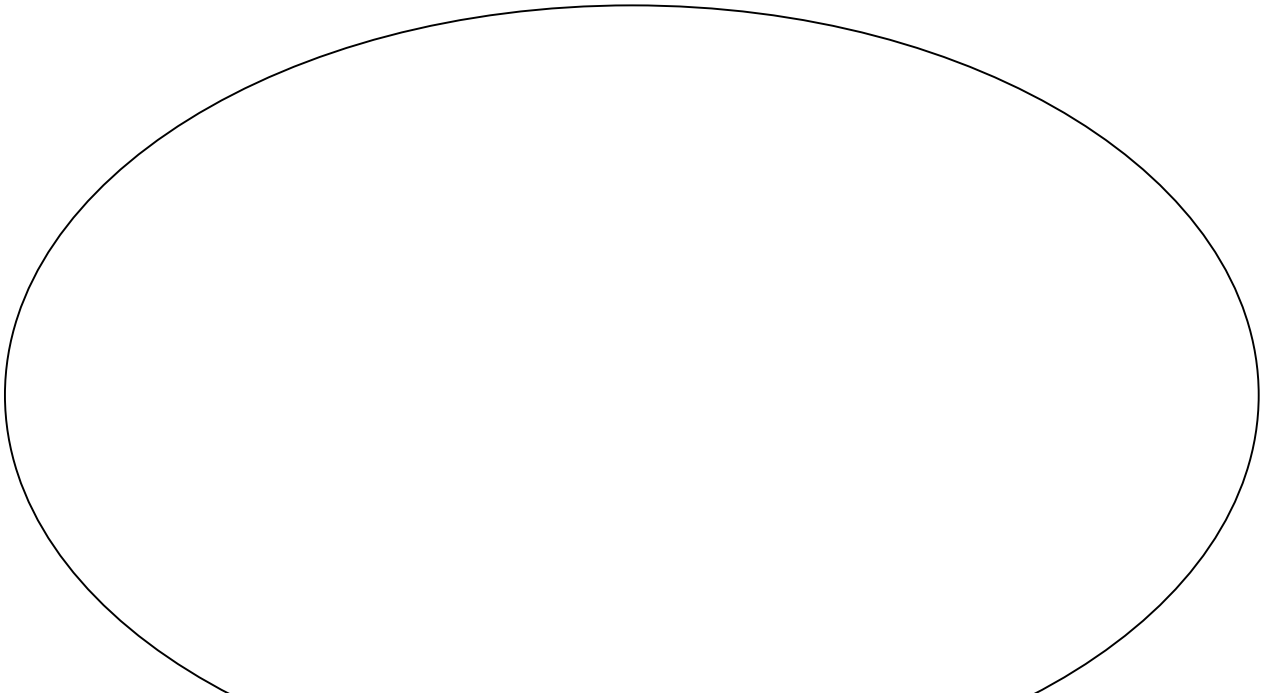
Small rhombus onions = $1.00

Rhombus green peppers = $5.00

Square olives = $10.00

Pizza Making Time!

Once you have chosen your toppings, trace and color the pattern block pieces to make your pizza on the next page. Add up all the toppings on your pizza and write the price below your pizza.



Name _____ Date _____

Brief Constructed Response (BCR)

How Much Does Your Pizza Cost?

Part A.

Look at the cost of your pizza. If you added another pepperoni piece to your pizza, how much would it cost?

The new price of my pizza is _____

Part B.

Use what you know about place value and money to justify your answer. Use pictures, numbers and or words in your explanation.

_____

_____

_____

_____

_____